CLAIMS

1. Polyorganosiloxanes (POSs) comprising siloxane units of following formula (I):

$$R_aE_bG_cSiO_{\frac{4-(a+b+c)}{2}} \quad (I)$$

→ in which

- a + b + c = 0 to 3
- a, b, c = 0 to 3
- R corresponds to one or more identical or different radicals, R being chosen from monovalent hydrocarbonaceous groups, preferably from linear, branched and/or cyclic alkyls and/or aryls, and more preferably still from linear or branched C_1-C_4 alkyls and phenyl, xylyl and tolyl groups;
- E corresponds to one or more monovalent functional substituents, which are identical to or different from one another, carrying one or more peroxo(-O-O-) functional groups Fpo and each optionally comprising one or more Fpo-stabilizing functional groups Fstab which are identical

to or different from one another and are chosen from functional groups capable of bonding via weak bonds with the Fpo functional groups;

- G corresponds to one or more functional substituents, identical to or different from one another, each comprising one or more Fpo-stabilizing functional groups Fstab which are identical to or different from one another and are chosen from functional groups capable of bonding via weak bonds with the Fpo functional groups;

→ with the conditions according to which:

.(i). the concentration of [Fpo] functional groups, expressed by the ratio

$$\frac{\textit{Fpo number}}{\textit{Total number of silicon atoms in the POS}}$$

is defined as follows:

Δ	$0 < [Fpo]$
Δ preferably	$0.01 \leq [Fpo] \leq 1.0$
Δ and more preferably still	$0.1 \leq [Fpo] \leq 0.6$,

.(ii). the concentration as mol% of T siloxane units (a + b + c = 1) and/or Q siloxane units (a + b + c = 0) is defined as follows:

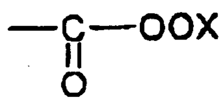
Δ	$0 \leq [T \text{ and/or } Q] \leq 20$
Δ preferably	$0 \leq [T \text{ and/or } Q] \leq 10$
Δ and more preferably still	$0 \leq [T \text{ and/or } Q] \leq 8$.

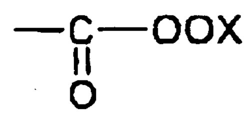
2. Polyorganosiloxanes according to claim 1, characterized

■ in that the E substituents of the units (I) are identical to or different from one another are chosen from (cyclo)aliphatic and/or aromatic and/or heterocyclic hydrocarbonaceous groups optionally comprising one or more heteroatoms, preferably O, N, S or Si, it being possible for these groups optionally to be substituted;

■ and in that Fpo is included:

➢ either in an acyl peroxide





➢ either in an acyl peroxide:

with X corresponding to H, [lacuna] representing an aliphatic and/or alicyclic and/or aromatic and/or heterocyclic monovalent hydrocarbonaceous radical, that is to say comprising, inter alia, hydrogen and carbon atoms, optionally comprising one or more heteroatoms (N, O, S, and the like), it being possible for this radical optionally to be substituted;

it being possible for R^x optionally to correspond to the same definition as that given above for R in the formula (I), to a

halogen, preferably chlorine, or to a cation which makes it possible to form a salt with the peroxo anion and which is preferably chosen from the elements from columns Ia and IIA of the Periodic Table,

- or in a peroxide residue comprising sulfur, phosphorus, silicon or boron as oxygen carrier.

3. Polyorganosiloxanes according to claim 1 or claim 2, characterized in that, in the G substituent or substituents of the formula (I), the Fstabs correspond to functional groups which can generate weak bonds (hydrogen bonds) with Fpo and which are selected from the group consisting of:

- → functional units comprising nitrogen and/or oxygen and/or fluorine and/or sulfur and/or phosphorus; carboxylic, carboxylate, amide, imide, sulfonamide, hydroxyl, alkoxy, amine or organofluorinated units being preferred;
- → cationic units, preferably those comprising one or more quaternary ammoniums;
- → chelating units comprising one or more ether functional groups and/or one or more amine functional groups, and/or

phosphonate and/or sulfonate chelating units.

4. Polyorganosiloxanes according to any one of claims 1 to 3, characterized in that they correspond to the formula (II) given below:

$$\text{(II)}\quad R^1_3SiO-[SiR^2_2O]_m-[SiR^2EO]_n-[SiR^2GO]_o-SiR^3_3$$

in which:

- R^1 and R^3 independently representing a hydrogen, a hydroxyl or a monovalent residue corresponding to the same definition as that given for R above;
- R^2 independently represent hydrogen, a hydroxyl or a monovalent residue corresponding to the same definition as that given for R above;
- $2 \leq m + n + o \leq 300$
- preferably $3 \leq m + n + o \leq 50$
- and more preferably still $5 \leq m + n + o \leq 20$

- $0 \leq m \leq 200$
- preferably $1 \leq m \leq 100$
- and more preferably still $1 \leq m \leq 10$

- $0 \leq n \leq 50$

- preferably $1 \leq n \leq 10$
- and more preferably still $2 \leq n \leq 4$

- $0 \leq o \leq 50$
- preferably $1 \leq o \leq 10$
- and more preferably still $2 \leq o \leq 4$.

5. Polyorganosiloxanes according to claim 4, characterized in that:

Δ R^1 and R^3 = C_1-C_3 alkyl, preferably $-CH_3$

Δ R^2 = C_1-C_3 alkyl, preferably $-CH_3$

Δ the functional substituent or substituents E simultaneously comprise Fpo and Fstab functional groups.

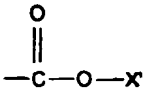
6. Polyorganosiloxanes according to any one of claims 1 to 5, characterized in that E comprises, in addition to the Fpo group or groups, at least one bicarboxylated and/or benzoxyl and/or imide unit.

7. Process for the preparation of the POSs according to any one of claims 1 to 6, characterized in that it consists essentially in oxidizing polysiloxane precursors of the POSs according to any one of claims 1 to 6, using at least one oxidizing agent preferably chosen from the group consisting of:

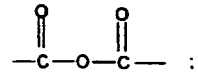
H_2O_2, O_2, O_3 and their mixtures,

these -POS precursors being distinguished from the targeted peroxide-comprising POSs in that they

comprise one or more F'po functional groups which are Fpo precursors and are composed:

- of carboxyl residues: 

  with X' corresponding to the same definition as that given for X in claim 2;

- and/or of acid anhydride residues:  ;
- and/or of aldehyde residues;

and/or of oxide residues comprising sulfur, phosphorus, silicon or boron.

8. Process according to claim 7, characterized in that the -POS precursors which are subjected to oxidation to produce targeted peroxide-comprising POSs are selected from POSs carrying functional substituents E:

- anhydride substituents
- and/or carboxyl substituents, preferably benzoyl substituents,
- and/or aldehyde substituents, preferably benzaldehyde substituents,
- and/or sulfonyl substituents,
- and/or phosphoryl substituents,
- and/or siloxyl substituents,
- and/or boroxide substituents.

9. Process according to claim 8, characterized in that the -POS precursors selected:

⇒ carry anhydride E groups, the oxidation being carried out using H_2O_2 in the presence of a catalyst of strong base type, preferably potassium hydroxide,

⇒ and/or carry carboxylic E groups, preferably benzoyl groups, the oxidation being carried out using H_2O_2 in the presence of a catalyst of strong acid type.

10. Process according to any one of claims 1 to 9, characterized in that use is made of -POS precursors with a molar purity ≥ 90%, preferably ≥ 95%.

11. POS precursors as defined in any one of claims 7 to 10.

12. Use of the peroxide-comprising POSs according to any one of claims 1 to 6 and/or obtained by the process according to any one of claims 7 to 10 as:

- bleaching agent,
- and/or disinfecting agent,
- and/or cleaning agent,
- and/or polymerization initiating agent,
- and/or agent for epoxidation.

13. Dental composition, in particular a dentifrice, characterized in that it comprises peroxygenated POSs according to any one of claims 1 to

6 and/or [lacuna] by the process according to any one of claims 7 to 10 as bleaching agent.

14. Detergent composition, characterized in that it comprises peroxygenated POSs according to any one of claims 1 to 6 and/or [lacuna] by the process according to any one of claims 7 to 10 as bleaching agent.